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Quality of Life in Post-Stroke Patients with Dysphagia

An Honors Thesis Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Nursing with Distinction

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Abstract

Background: Dysphagia, defined as difficulty swallowing, is recognized as a problem for many patient populations and in many healthcare settings. Impaired swallowing has numerous health repercussions such as aspiration, which could lead to severe pneumonia and increased mortality, hypovolemia, failure to thrive, upper airway obstruction and numerous eating difficulties which could lead to social withdrawal. Quality of life is a complex concept and includes the patient's physical comfort, spirituality, psychological well-being, autonomy of medical decision-making and continuity of care. There is considerable research on dysphagia, the associated risks, and the clinical implications that occur with its pathology. However, to date, there are no studies describing the relationship of the quality of life perspectives of post-stroke patients with dysphagia and its relational effect on the discharge disposition.

Specific Aims:

1. Describe the impact of dysphagia on perceived quality of life in post-stroke patients in the acute rehabilitation setting.
2. Describe the relationship between quality of life in post-stroke patients with dysphagia and their discharge dispositions from an acute rehabilitation setting.

Methods: This is a secondary analysis of the ongoing randomized control study, "The Impact of an Oral Care Protocol on Post-Stroke Patients". Inclusion criteria include: (1). 18 years of age, (2). primary diagnosis of stroke within 30 days of admission, (3). admission directly from acute care facility and 4). documentation of dysphagia. This study uses SWAL-QOL, a 44-item tool that assesses 9 concepts related to quality of life. Subscales include burden of dysphagia, eating

duration and desire, symptom frequency, food selection, communication, mental health, fatigue and sleep. Reliability of the subscales are reported from 0.79 to 0.94. Data analysis will use descriptive and correlational statistics.

Conclusion: Dysphagia and aspiration risk in post-stroke patients remains a significant clinical problem. Nurses must teach patients and families strategies to minimize risks of aspiration to help prevent noncompliance and adverse outcomes. Additionally, nurses must clearly communicate a patient's status upon discharge to another facility. Multiple factors likely contribute to determining discharge disposition post rehabilitation in the patient with stroke. This highlights the importance of individualizing the discharge plan for each patient.

Implications: Findings from this study should provide an enhanced understanding of dysphagia, and its' impact on quality of life in post-stroke survivors.

Chapter I

Introduction

Dysphagia, defined as difficulty in swallowing, has been recognized as a problem for many patient populations and in many healthcare settings. Impaired swallowing has numerous health repercussions such as aspiration, which could lead to severe pneumonia and increased mortality, hypovolemia, failure to thrive, upper airway obstruction and numerous eating difficulties which could lead to social withdrawal (Chen, Golub, Hapner, & Johns, 2009). Dysphagia can cause considerable morbidity and mortality and is a clinical problem that warrants attention (Chen et al., 2009).

Fifty percent of post-stroke patients have swallowing dysfunction (Davis, 2007). In a comprehensive literature review of quality of life issues related to dysphagia, Davis (2007) reviewed multiple issues including "physical, spiritual, emotional, nutritional and social" (p.353) aspects of life, which contribute to a patient's overall quality of life perception. It was found that many post-stroke patients have difficulty chewing, fear of choking and coughing, and are at risk for aspiration. Many patients prefer to eat alone, creating a social isolation. Many patients felt discomfort while eating, or never felt fully satisfied after a meal. In order to manage this anxiety, many health professionals attempt to modify the client's diet. Usually, diets are reduced to softened foods due to the risk for choking or difficulty chewing, and liquids are thickened because of coughing or risk of aspiration (Logemann, 1998). Even with dietary modifications, many potential complications can arise when a patient has dysphagia including: aspiration, malnutrition, dehydration, and psychological stress or anxiety over eating. Thus the purpose of this study is to:

1. Describe the impact that dysphagia has on perceived quality of life in post-stroke patients in the acute rehabilitation setting.

2. Determine if there is a relationship between quality of life in post-stroke patients with post-stroke dysphagia and their discharge disposition from an acute rehabilitation setting.

Chapter II

Literature Review

Physiology of Dysphagia. Dysphagia is a swallowing disorder. For swallowing to occur, it requires well-coordinated timing of sensory and motor mechanisms to safely transport a bolus from the oral cavity through the esophagus (Mendell & Logemann, 2007). Swallowing begins in the oropharynx (oral cavity) and the muscles of mastication and tongue form a bolus, and then propel the bolus to the back of the cavity, near the pharynx. Muscles of the pharynx move the bolus into the esophagus. The esophagus is a hollow, muscular tube approximately 25cm long that conducts substances from the oropharynx to the stomach. Swallowed food is moved to the stomach by peristalsis, the coordinated sequential contraction and relaxation of outer longitudinal and inner circular layers of muscles (Huether & McCance, 2008). At each end of the esophagus there are two sphincters; the upper esophageal sphincter keeps air from entering the esophagus during respiration, and the lower esophageal sphincter (cardiac sphincter) prevents regurgitation from the stomach and caustic injury to the esophagus. Swallowing consists of two phases: the oropharyngeal (voluntary) phase and the esophageal phase.

In the voluntary phase, food is segmented into a bolus by the tongue, chewing, and salivary actions. In order to produce a bolus, initial containment within the oral cavity, such as lip closure to prevent leakage and tongue control to prevent spillage into the pharynx, is essential (Mendell & Logemann, 2007). The salivary glands produce saliva, which contains electrolytes and enzymes to help facilitate the initial breakdown of starch (Huether & McCance, 2008). Mastication requires adequate lateral and rotary motion, and the tongue facilitates the controlled, posterior movement toward the pharynx. Bolus preparation can be influenced by bolus consistency, bite size, and the ability to mix a bolus with saliva. Once the bolus is created, it

must be moved to the posterior oropharynx by the tongue. The propulsion of the bolus requires effective control of the tongue and neuromuscular movement. After this occurs, the second phase of voluntary swallowing begins. The pharyngeal swallow is a complex action of events. The superior constrictor muscle of the pharynx contracts so the food cannot move into the nasopharynx (a protective mechanism). As this occurs, respiration is inhibited and the epiglottis slides down to prevent the food from entering the larynx and trachea. The entire voluntary phase occurs in less than 1 second in a healthy patient.

Once the bolus of food enters the esophagus, waves of relaxation travel through the esophagus, preparing for the movements of the bolus (Huether & McCance, 2008). In this phase, known as the esophageal phase, the movement of the bolus down the esophagus, called peristalsis, occurs as the sequential waves of muscular contraction travel down the esophagus and transport the food to the lower esophageal sphincter, which is relaxed and open to allow passage into the stomach. Once the bolus enters the stomach, the sphincter returns to its' resting tone (closed). The esophageal phase of swallowing takes about 5 to 10 seconds, with the bolus moving 2 to 6 cm per second.

Swallowing is a complicated mechanism involving the well-coordinated timing of six cranial nerves, four cervical nerves, and more than 30 pairs of muscles. An understanding of the normal anatomy and physiology of the larynx, pharynx, and esophagus allows the clinician and supportive nursing staff to better identify the mechanisms of dysphagia, as well as apply the appropriate interventions to treat any issues (Goyal, 1997).

Dysphagia is a swallowing pathology defined as difficult, painful, or impaired swallowing. Generally, there are two types of dysphagia: mechanical and motor dysphagia. Mechanical dysphagia can be caused by external compression of the esophagus, such as lymph

node obstruction, intrinsic narrowing, such as sclerosis, or a very large food bolus (Goyal, 1997). Motor dysphagia may result from difficulty in initiating a swallow or from abnormalities in peristalsis due to diseases of the esophageal striated or smooth muscle, or the nervous systems affecting those muscles.

Recent studies have shown that motor dysphagia is the loss of central nervous system control over swallowing, which commonly occurs during cerebral, cerebellar, or brainstem strokes (Clarkson, 2011). Swallowing problems after a stroke are common, with an incidence range from 19-81 percent. The area of the brain affected by the stroke will display differing severities of dysphagia. Lesions in the lower brainstem generally result in more significant dysphagia due to the location of the major swallow centers within the medulla. Additionally, subcortical lesions may affect motor as well as sensory pathways, resulting in mild swallowing delays.

Assessment and diagnosis of dysphagia. Assessments of dysphagia are obtained through bedside examination or instrumental investigation (Singh & Hamdy, 2006). Bedside assessments continue to be the cornerstone of clinical practice as clinicians, nurses, and speech therapists assess a patients' ability to swallow by presenting small volumes of food and liquid of varying consistency to the patient and watching for signs of aspiration or dysphagia. Clinicians should look for signs including loss of liquid from the mouth, dyspraxia or poor coordination of swallowing muscles, facial weakness, delayed pharyngeal/laryngeal elevation, throat clearing, breathlessness, and changes in voice quality after swallow, and pocketing of food (having food get stuck in the mouth). Coughing is a common sign and could indicate numerous problems including slow swallow response, poor laryngeal closure to protect the airway, or ineffective bolus clearance by the pharyngeal constrictors. Symptoms of impaired swallowing vary greatly,

and all symptoms may not be present at once, or may not be present at all (Matsuo & Palmer, 2008). Some disadvantages of bedside assessments include that it relies on findings that are subjective and clinician-dependent. Even more, screening systems that increase the sensitivity of their scales and/or scoring systems may conversely show a decline in its specificity (Singh & Hamdy, 2006).

The Mann Assessment of Swallowing Ability (MASA) is used at the bedside to score and assess patients with dysphagia. It is a swallowing function assessment that is efficient, cost-effective, and reliable (Mann, 2002). Health care professionals can evaluate patient progress by administering this screening tool over time, or use it to determine which candidates need more in-depth instrumental evaluation.

Instrumental investigation involves using instruments and technology to assess and diagnose dysphagia. Videofluroscopy (VFS) is considered the current gold standard and has been effective for examination of patients without clinical signs, or "silent aspirators" (Singh & Hamdy, 2006). VFS, specifically, is also known as the modified barium swallow. It requires the oral administration of radio-opaque barium liquid with moving images captured in the lateral view. The barium can be mixed with water to varying consistencies or added to other foods in order to assess swallowing impairments. Advantages of VFS include visualization of dysphagia, as well as time-effectiveness. The fluoroscopy session is a quick procedure, only 10-15 minutes. A disadvantage of VFS is exposure to radiation and the fact that barium has a different density compared to normal foods. Because of this, its' consumption may not be a sign of the aspiration risk with other foods.

The best possible diagnostic and assessment procedures should include access to both bedside screening tests, such as the MASA and VFS. During bedside assessment, clinicians

should be aware of the signs and symptoms that could indicate dysphagia, including: drooling, leakage of liquid or food, pocketing, coughing, feeling that food or pills are getting "stuck" in their throat, or noticeable change in their voice when eating or drinking (Matsuo and Palmer, 2008).

Clinical management of dysphagia. Management of dysphagia includes an understanding of swallowing physiology, dysphagia pathology, quick instrumental assessment and rehabilitation. A systematic review conducted by Bath, Bath-Hextall and Smithard (2009) demonstrates that there are too few studies and thus insufficient evidence to definitively support a specific management intervention for dysphagia.

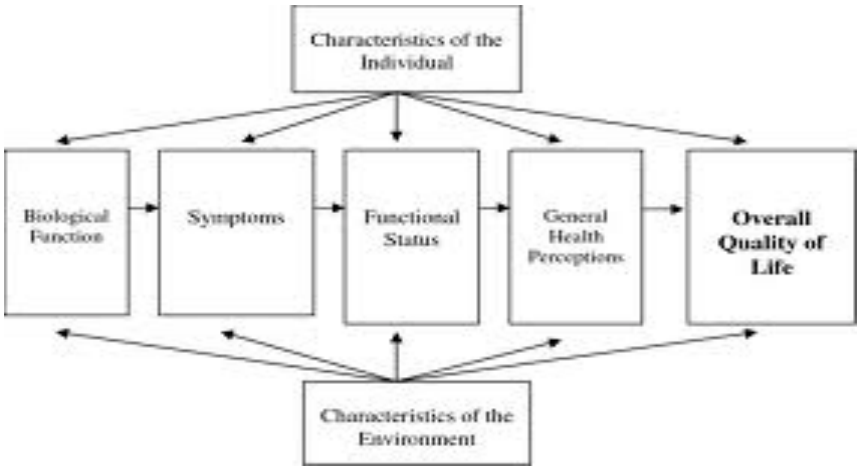
Once an instrumental assessment has been conducted, the patient should undergo vigorous rehabilitation including speech and language therapy. Speech therapy should include compensatory and physiologic techniques for dysphagia. Compensatory management allows for an immediate reduction in risk to the patient but does not change the physiology of the swallow mechanism itself. Instead, the overarching goal is to alter the bolus flow and thus help eliminate symptoms such as aspiration or post-swallow residual (Daniels & Huckabee, 2008). Compensatory techniques are changes that are made in normal functioning that will reduce aspiration or improve pharyngeal clearance. Examples of these techniques include: postural changes, chin tuck positioning, bolus modification, bolus clearing maneuvers, and sensory enhancement including temperature, carbonation, and taste for symptom relief. Conversely, physiological technique rehabilitation is an exercise program where oral motor exercises are used to strengthen swallowing muscles with the goal of improving the oral phase of swallowing (Daniels & Huckabee, 2008). Exercises include head-lifts and tongue-hold maneuvers.

Dietary modifications should also be used to clinically manage dysphagia (Davis, 2007). Foods should be served to patients in a softer consistency because of choking or chewing disability. Thickened liquids can help reduce the risk of coughing and aspiration. These changes should only be put into practice after careful screening and assessment; otherwise these interventions could put the patient more at risk for aspiration or choking (Logemann, 1998). It may also be difficult to implement long-term dietary modification since many clients become noncompliant. Many of their complaints include food not tasting good, eating "baby food", and complaints of the way the food or drink "feels" (Pelletier, 1992).

However effective these practices may be, an interdisciplinary approach is essential for post-stroke patients with dysphagia involving rehabilitation, speech therapy, nutritionists and dietetic counseling, physical therapy, and nursing care should work together to ensure the best quality of life for each patient (Hughes, 2011). Tasks such as positioning, swallowing assessment, nutritional assessment, and oral care are the hallmarks of post-stroke management of dysphagia. A holistic assessment of needs is fundamental to improving the patient's quality of life and dysphagia symptoms**.**

Quality of life in post-stroke patients. The concept of quality of life is complex and varied. In a review of the research on quality of life in stroke survivors, it was suggested that a screening utilizing quality of life instruments should evaluate social, mental, and physical functioning to achieve the most holistic assessment of quality of life. It was found that many patients evaluated their quality of life referring only to mental, and not including physical, health (Bays, 2001). It was suggested that in order to obtain the highest possible level of quality of life, patients should achieve the maximal degree of independence and functionality for activities of daily living.

When evaluating quality of life, many researchers utilize the Wilson and Cleary model, a conceptual model consisting of 5 levels that illustrates the progressive integration of biological/physiological input, level 1, to the complex and subjective multi-variable perception of quality of life, level 5 (Halvorsrud, L., Kirkevold, M., Diseth, A., & Kalfoss, M., 2010). The first level is a biological-physiological level based on clinical data and assessment. The second level evaluates symptom status and one's perception of an abnormal state, whether that is physical, emotional, or cognitive. Functional status is determined in level 3, when an individual perceives his ability to perform designated tasks while being mediated by their symptoms. In level 4, an individual considers their perception of their general health, based on all the preceding levels and concepts. Finally, level 5 and the final perception of quality of life is the subjective perceptions of the satisfaction of one's situation (Wilson and Cleary, 1995). Wilson and Cleary's model reveal that pathophysiology of basic biological function is not directly correlated with quality of life or optimum functioning, but rather a progression that varies from patient to patient based on their personal perceptions of impaired well-being.



There have been many studies conducted to determine what aspects define quality of life. Delacourt et al. (2011) conducted their study *Determinants of Quality of Life After Stroke in*

China: the ChinaQUEST (Quality Evaluation of Stroke and Treatment) and discovered the determinates of health-related quality of life. Quality of life was evaluated and determined in 12-month post-stroke survivors by using a 35-item questionnaire. 4283 survivors from 62 Chinese hospital registries took the questionnaire. It was concluded that the strongest predictor of quality of life was the level of disability at discharge; for example, if the patient had great disability at discharge, their quality of life was reportedly low. If the patients had minimal or no disability, they reported a higher quality of life. Another important factor of quality of life was income. It was hypothesized that if insurance or other monetary supplement could help offset the cost, it might improve the overall well-being and quality of life. Similarly, the study *Discharged After Stroke—Important Factors for Health Related Quality of Life* and examined different variables that correlated to quality of life (Almborg, Ulander, Thulin, & Berg, 2010). Cross sectional studies and interviews were conducted from 188 individuals from a stroke unit in Sweden and findings showed that variables associated with quality of life in post-stroke patients included age, gender, level of depression, fatigue, functional status, length of stay in the hospital, and social participation. In general, younger, educated patients who were able to perform personal care and engage in social activities and had a short hospital stay reported a higher perceived quality of life. Depressive symptoms were associated with a lower quality of life. To reinforce the idea of participation improving health-related quality of life, *The Influence of Participation on Health-Related Quality of Life in Stroke Patients* by interviewed 500 patients at 3 months post-stroke, and 433 patients 12 months post-stroke. In this study, three (3) scales were used to measure limitations of participation in health care. It was found that independence, social integration, economic sufficiency (all of which were labeled as forms of participation) had a positive influence on perceived quality of life (Kwok, Pan, Lo, & Song, 2011).

Other research has focused not only on what factors influence quality of life, but how to improve that perception. Some studies evaluated the impact of a post-stroke exercise program and the impact it had on post-stroke quality of life (Holmgren, Gosman-Hedström, Lindström, & Wester, 2010). Patients older than 55 and at risk of falls were included in this study. It was found that intensive exercise regimens, coupled with stroke fall-prevention education, had a positive impact on quality of life. It was determined that response shift, otherwise known as a change in the self-perceived meaning of health related quality of life, was present and had implications when there was a change in physical function (Barclay-Goddard, Lix, Tate, Weinberg, & Mayo, 2011). In their study, *Health-Related Quality of Life after Stroke: Does Response Shift Occur in Self-Perceived Physical Function?* secondary data analysis of 677 post-stroke survivors determined that assessment measures should focus more on task-performance to detect changes in physical function, rather than choosing a self-perceived measuring tool of physical function. This would ensure that response shift, or natural change of perceived importance of domains, would be minimized. It was found that these measures would increase the understanding of the patient's quality of life and how to improve it.

The study conducted by Halvorsrud and colleagues (2010) concluded the concept of quality of life is a complex phenomena with multiple variables contributing to a person's subjective perception; these variables include depression, physical function, perceived health, environmental condition, and age (Halvorsrud et al., 2010). It is important to understand these aspects of quality of life and how they affect patient outcomes.

Dysphagia and quality of life. Dysphagia, likely a chronic state, has the potential to significantly impact quality of life in post-stroke patients with dysphagia. It can impact their diet, social activities, level of independence, and emotional well-being (Davis, 2007).

Quality of life can help predict a patient's mortality (McHorney, Martin-Harris, Robbins, and Rosenbek, 2006). As a prognostic tool, abnormal quality of life scores can be used to identify "physical or mental marker of clinically important perturbations in pathophysiological and human function" (p.145), or changes in a patient's stable status. Quality of life screening tools, like the SWAL-QOL, should be incorporated into holistic clinical evaluation of a patient and their overall well-being.

McHorney et al. (2006) developed the SWAL-QOL to be used as a screening tool to evaluate a patient's psychosocial needs. McHorney et al. believes that healthcare professionals have an obligation to improve both the quality and length of life. The study concludes that there should be more patient-centered measures of well-being instead of traditional clinical measures because physiologic issues have a pronounced effect on the entire person, not just a clinical outcome. More institutions are incorporating quality of life measures in an attempt to reverse the effect of poor perceived quality of life on clinical outcomes. McHorney et al. states that any low measure of quality of life "should be a red flag to clinicians that something is amiss, regardless of what the physiologic data report" (p. 147).

There were 10 subscales that were evaluated using Likert's method of summated ratings, where patient rate individual items and then all are taken to sum into an overall score. A score of 100 indicated the most favorable stae, or highest perceived quality of a particular subscale. A score of 0 indicated the least favorable state, or lowest perceived quality of that subscale.

Burden was evaluated by two questions, assessing whether dysphagia was difficult to deal with and/or a major distraction in the patient's life. Perceived quality of Eating Duration was assessed with two questions, asking patients whether or not they felt that the dysphagia took them longer to eat their meals. Eating Desire was evaluated by three questions that asked patients if they cared about eating, enjoyed eating, or if they were hungry anymore. Symptom Frequency, which assessed if they patient had experienced coughing, choking, gagging, excess saliva, drooling, problems chewing or swallowing, and dribbling of foods, was determined by fourteen questions. Two questions of Food Selection determined if it was easy for the patient to figure out what they could eat, and if they enjoyed the new food selection available to them. Communication was evaluated by two questions, whether the patient felt like they could be understood and if they felt they could speak clearly. Four questions assessed Fear, whether the patient was afraid of choking or getting aspiration pneumonia because of their swallowing problems. Mental Health was assessed in five questions by determining if the patient felt depressed, frustrated, or discouraged by their dysphagia. Three questions determined Fatigue, by assessing whether the patient felt weak, exhausted, or tired all the time. Finally, qualify of Sleep was determined by efforts to fall asleep and stay asleep (McHorney, 2002).

Chapter III

Methods

Primary study. This is a secondary analysis of a randomized controlled trial, Impact of an Oral Care Protocol in Post-Stroke Survivors. The primary study is still enrolling subjects. The primary study enrolled post-stroke patients with a 10 day minimum anticipated stay in the rehabilitation unit. All post-stroke subjects are screened for eligibility upon admission to the Rehabilitation unit. Inclusion criteria include: (1) age 18 years or older, able to communicate in English, and able to give informed consent, (2) admission to OSU acute rehabilitation facility, (3) documentation of oral and/or pharyngeal dysphagia from Modified Barium Swallow and/or Fiberoptic Endoscopic Evaluation of Swallowing. Exclusion criteria includes: (1) current co-morbid diagnosis of pneumonia, (2) known infection of the oral cavity and/or receiving therapy for infection of the oral cavity, (2) documented history of a hematological disorder, (4) medically restricted fluid intake, (5) allergy to Listerine^{TM} or other mouth care products, (6) currently wearing dentures, (7) pregnant or nursing mothers, (8) known MRSA colonization or active infection. Upon meeting inclusion criteria and consenting to participate, subjects are randomized to either a control group or intervention group. The Dyphagia Outcome Severity Scale is used to determine dysphagia severity by classifying the patients in dysphagia categories 2 and 3 as severe and categories 4-6 as mild-moderate.

Based on detecting a clinically significant 22 point difference in the Mann Assessment of Swallowing Ability (MASA) swallowing test (Mann, personal communication, 1/21/07), 21 subjects will be recruited for each group. Accounting for a potential 25% attrition rate, we will recruit 26 subjects to each group. This will provide 80% power to detect a difference at $p=0.05$ significance level.

In the primary study, subjects assigned to control group receive routine oral care provided by the nursing staff according to facility policy. Subjects assigned to the intervention will receive the oral care protocol which includes twice daily care with timed toothbrushing with a battery operated toothbrush, selected toothpaste and, mouthrinses and and lip lubrication. Registered nurses who received training from the research staff will provide the oral care intervention.

Subjects in both the control and intervention group has blinded oral cavity assessments recorded every third day using the Revised THROAT assessment. This instrument has been revised based on our group's use of the original THROAT instrument (Dickinson, Watkins, & Leathley, 2001). The Revised Throat assessment tool includes seven areas of the oral cavity: lips, gums, teeth, tongue, saliva, smell, and mouth comfort. Each category is assessed on a numeric scale from 1 to 3 with 3 representing the most compromised. The overall score is the sum of the 7 categories.

All subjects have oral cultures for *S. aureus* taken on day 3, 7, and day 11. A standard laboratory protocol will be used to detect the growth of *S. aureus* from swab samples. All subjects have daily caloric counts and fluid intake counts. These are calculated by the nursing staff daily for a 24-hour period. Calories will be calculated per kilogram, and then calculated to determine the subject's percentage of daily caloric requirements intake. In addition, oral intake is scored using the *Functional Oral Intake Scale (FOIS)* on day 3 and day 11. The *FOIS* was developed to document the functional level of oral intake of food and liquid in patients with stroke (Crary, Carnaby-Mann, & Groher, 2005). This scale has seven levels; levels 1-3 reflect non-oral feeding abilities, levels 4-7 reflect oral feedings with varying degrees of supplementation. This scale has been shown to have documented reliability and validity (Crary

et al., 2005). Clinical evaluation of dysphagia will be done using the *Mann Assessment of Swallowing Ability (MASA)*. This instrument scores the subject's cognitive, communicative and motor abilities that impact swallowing. A score of less than 178 out of a possible 200 identifies a patients with clinical symptoms associated with dysphagia (Mann, 2002). A score of 138 or less represents severe dysphagia; 139-167 is moderate dysphagia; and 168 to 177 is mild dysphagia. Scores between 178-200 are within normal limits. A score less than or equal to 140 represents a severe risk for aspiration; 141-148 is moderate risk of aspiration; and149-169 is a mild risk for aspiration. Reliability of the MASA has been reported in the patient with stroke, with a Cronbach alpha at .90 with acceptable inter-observer agreement. New onset aspiration pneumonia, other systemic infections, and any new antibiotic therapy during course of rehabilitation treatment occurring between day 3 and day 11 will be collected via chart review. Perceived quality of life will be measured using the SWAL-QOL (McHorney et al., 2002). The SWAL-QOL is a 44-item tool that assesses 10 concepts related to quality of life issues for patients with dysphagia. The subscales reflect burden of dysphagia, eating duration, eating desire, symptom frequency, food selection, communication, fear, mental health, social functioning, fatigue, and sleep. Reliability of the subscales has been reported from .79 to .94. Nine of the 10 subscales will be used, eliminating the subscale of social functioning since subjects are inpatients. Each subscale had a score distribution of 0-100. Lower scores (scores closer to 0) indicated lower quality of life perceptions in a subscale, while higher scores (scores closer to 100) indicated a higher perceived quality of life in a subscale (McHorney et al., 2002). This primary study is still ongoing. 38 subjects were included in the secondary analysis.

Secondary study.

The focus of the secondary study was on dysphagia, quality of life, and discharge disposition. Discharge disposition was collected from the medical record and classified into 4 categories: home, skilled nursing facility (SNF), rehabilitation center, or transfer to an acute care facility. The sample was a convenience sample of all patients who were enrolled at the time of analysis for this study. The methods included using the second MASA assessment, which was performed on day 11, as well as the SWAL-QOL assessment tool which was performed at the conclusion of the study. All subscales were used except social functioning, since the questions addressed participation of activities outside of a hospital setting.

Data analysis. Descriptive statistics including frequencies and means were used to analyze the demographic data, calculate the MASA, and SWAL-QOL scores. Analysis of variance (ANOVA) was used to compare the SWAL-QOL subscales by severity of dysphagia and aspiration risk. Due to the small number of subjects in the severe dysphagia and aspiration groups, this category was collapsed into a moderate/severe group. If the overall ANOVA test was significant, a Tukey Post-Hoc test was examined to determine which groups differed significantly from each other.

Chapter IV

Results

Aim 1.

Demographic characteristics. The sample size for this study was 38 participants; 19 females and 19 males enrolled in this study. The majority of the subjects enrolled in this study were Caucasian (68%). African Americans made up an additional 24 percent and Asian Americans were the smallest representing, only 5 percent of participants. One participant chose not to answer the question as to their ethnicity. The mean age of participants in this study is 61 years old. Table 1 presents the background characteristics of this study sample population.

Table 1: Demographics

	Frequency (N)	**Percent (%)**
Sex		
Male	19	50
Female	19	50
Race*		
White	26	68.4
Black	9	23.7
Asian	2	5.3
Age	61.2	100
Total participants	38	100

*Missing one (1) patient ethnicity due to refusal.

Mann Assessment of Swallowing Ability (MASA).

The MASA was used to evaluate the severity of dysphagia and aspiration severity scores based on a numerical rating. Although inclusion criteria for this study required that subjects have at least mild dysphagia, at discharge based on the MASA scoring,, 55.3 percent of our subjects (n=21) had no dysphagia. Additionally, 13.2 percent (n=5) subjects scored on this

MASA had mild dysphagia, 28.9 percent (n=11) scored to have moderate dysphagia, and 2.6 percent (n=1) scored severe dysphagia upon discharge.

For aspiration risk, 68.4 percent (n=26) of the patient population enrolled in this study were not at risk for aspiration upon discharge. Additionally, 23.7 percent (n=9) had a mild risk, 2.6 percent (n=1) had moderate risk, and 3 percent (n=2) had a severe risk for aspiration at the time of discharge. Table 2 and 3 illustrate these findings.

Table 2: Dysphagia Severity upon Discharge

	N	Valid Percent (%)
No Dysphagia	21	55.3
Mild Dysphagia	5	13.2
Moderate Dysphagia	11	28.9
Severe Dysphagia	1	2.6
Total	38	100.0

Table 3: Aspiration Risk upon Discharge

	N	Valid Percent (%)
No Aspiration Risk	26	68.4
Mild Aspiration Risk	9	23.7
Moderate Aspiration Risk	1	2.6
Severe Aspiration Risk	2	5.3
Total	38	100.0

Discharge Disposition. Discharge disposition to either home or not home did not differ by quality of life. Overall, only 47% of patients were discharged to Home. Twelve percent were discharged to a Skilled Nursing Facility, 22 percent were discharged to a Sub-Acute (intermediate care) facility, and 18 percent were transferred back to an Acute Care Facility for further medical intervention. Table 4 illustrates these findings.

Table 4: Discharge Dispostion by percentage

Discharge Disposition	Percentage
Home	46%
Skilled Nursing Facility	12%
Subacute Facility	22%
Transfer to Acute Care Facility	18%

SWAL-QOL.

The SWAL-QOL Assessment tool is used to evaluate the effects of dysphagia on quality of life. SWAL-QOL scores increase as the perceived quality of life increases. Overall, quality of life subscales were higher among patients with no dysphagia than those with dysphagia, with the exception of Eating Duration and Sleep. Among all subjects, the lowest dysphagia-specific quality of life (QOL) subscale was Fatigue (54.6), followed by Burden (61.2), and Communication (61.6). It should be noted that all subjects with Mild Dysphagia had lower perceived mean quality of life averages than Moderate/Severe Dysphagia subjects in all of the following subscales: Burden, Eating Duration, Eating Desire, Fear of Eating, Sleep, Fatigue, and Communication.

Significant differences in several quality of life subscales among the 3 categories of dysphagia; general burden ($p=.02$), eating desire ($p=.01$), and communication ($p <.001$). Post-Hoc tests were conducted following these significant findings to determine differences between dysphagia groups. For General Burden, significant differences were found between “No

Dysphagia" and "Mild Dysphagia" groups (p=.02), with "Mild Dysphagia" having a lower perceived quality of life. For Eating Desire, significant differences were found between "No Dysphagia" and "Mild Dysphagia" groups (p=.007), with "Mild Dysphagia" having a lower perceived quality of life. Finally, for Communication, significant differences were found between "No Dysphagia" and both "Mild Dysphagia" and "Moderate/Severe Dsysphagia", (p=.009) and (p=.001), respectively. Both with "Mild Dysphagia" and "Moderate/Severe dysphagia" had a lower perceived quality of life. Table 5 illustrates these findings.

Table 5: Dysphagia severity compared to SWAL QOL subscales

Subscale	**No Dysphagia** Mean (SD) N	**Mild Dysphagia** Mean (SD) N	**Moderate/Severe Dysphagia** Mean (SD) N	**Total** Mean (SD) N	**P**
Burden	74.5 (30.4) 20	25 (30.6) 5	54.3 (42.2) 12	61.2 (37.8) 37	.019
Food Selection	80.1 (22.4) 20	80 (20.9) 5	73.9 (30.7) 10	78.3 (24.3) 35	.80
Eating Duration	63.3 (31.2) 20	37.6 (46.7) 5	72.9 (28.4) 11	62.6 (33.6) 36	.15
Eating Desire	82.9 (18.0) 20	40 (42.2) 5	72.3 (30.0) 12	73.6 (29.2) 37	.009
Fear of Eating	86.6 (16) 20	70.2 (36.4) 5	78.3 (26.0) 12	81.7 (22.9) 37	.31
Sleep	72.7 (29.7) 21	75 (43.3) 5	78.3 (31.5) 12	74.7 (31.4) 38	.89
Fatigue	55.1 (19.5) 21	53.4 (17.4) 5	54.2 (34.1) 12	54.6 (24.2) 38	.99
Communication	78.6 (23.0) 21	37.8 (23.5) 5	41.8 (31.7) 12	61.6 (31.8) 38	<.001
Mental Health	82.9 (17.9)	74 (30.7)	64.8 (35.4)	76	.18

	21	5	12	(26.7) 38	
Symptom Frequency	80.4 (13.3) 20	75.4 (16.3) 5	74.2 (23.0) 10	77.9 (16.7)	.61

The overall lowest Aspiration Risk-specific quality of life subscale was Communication (55.2), followed by Burden (55.8), and Fatigue (58.7). Through ANOVA analysis, the only significant finding subscale was Communication ($p=0.03$). Upon Post-Hoc analysis, there were no differences between aspiration groups. Table 6 illustrates these findings.

Table 6: SWAL-QOL Subscales and Aspiration Risk

Subscale	**No Aspiration Risk** Mean (SD) N	**Mild Aspiration Risk** Mean (SD) N	**Moderate/Severe Aspiration Risk** Mean (SD) N	**Total** Mean (SD) N	**P**
Burden	58.4 (39.3) 12	53.3 (40.6) 8	50 (70.7) 2	55.8 (40.1) 22	.61
Food Selection	72.8 (24.3) 11	82.2 (24.6) 7	100 (n/a) 1	77.7 (24.1) 19	.62
Eating Duration	45.5 (38.8) 11	72.1 (24.7) 8	100 (n/a) 1	58.9 (35.8) 20	.44
Eating Desire	62.2 (25.7) 11	72.9 (32.4) 8	75 (35.4) 2	67.5 (33.2) 21	.84
Fear of Eating	84.2 (25.7) 11	81.4 (26.6) 8	81.5 (26.2) 2	82.9 (24.7) 21	.52
Sleep	92.8 (11.2) 12	60.5 (22.0) 8	100 (0.0) 2	87.6 (24.0) 22	.63
Fatigue	60.5 (22.0) 12	58.3 (34.2) 8	50 (59.4) 2	58.7 (28.7) 22	.60
Communication	64.7 (31.4) 12	47.0 (37.1) 8	31.5 (26.2) 2	55.2 (33.7) 22	.025
Mental Health	76.7 (23.3) 12	72.5 (35.7) 8	64 (36.8) 2	74.0 (28.0) 22	.08
Symptom Frequency	79.4 (13.7)	72.9 (25.5)	79.50 (12.0)	77.9 (16.7)	.64

Aim 2:

Table 7 presents mean scores and p-values for each subscale between those discharged to home and those not discharged home (either a skilled nursing home, subacute facility or transferred back to the acute care setting). The only subscale with a p-value approaching significance (p=0.093) was Fatigue with subjects not discharged to home, scoring an average of 13.21 points lower than subjects discharged to home, followed by Symptom Effects (p=0.150), and Mental Health (p=0.269). Otherwise, no significant findings were found between SWAL-QOL subscales and discharge disposition. Although not statistically significant, it should be noted that all those subjects who were not discharged directly to home reported a lower SWAL-QOL score than those subjects that were discharged to home, with exception of eating duration and sleep.

Table 7: SWAL-QOL Scores and Discharge Disposition

Subscale	Not Discharged to Home Mean Score	Discharged to Home Mean Score	P-value
General Burden	55.70	57.77	.341
Food Selection	76.69	79.94	.689
Eating Duration	64.72	60.56	.716
Eating Desire	72.37	75.00	.788
Fear of Eating	77.74	85.89	.286
Sleep	75.10	74.33	.941
Fatigue	48.35	61.56	.093
Communication	61.35	61.94	.955
Mental Health	71.40	81.11	.269
Symptom Effects	73.71	81.89	.150

Chapter V

Discussion

Conclusion. Our results demonstrate that dysphagia and risk of aspiration even following intensive rehabilitation in the post-stroke patient remains a problem. Forty-five percent of subjects were discharged with at least mild dysphagia and 32% with some risk for aspiration. This underscores the importance of teaching patients and their families strategies to minimize risks of aspiration in the case of discharge to home. If nurses fail to do this, it could contribute to noncompliance and adverse outcomes. Davis (2007) found that poorly educated patients may be noncompliant with prescribed changes to their food, drink, and lifestyle, all of which have the potential to be affected by dysphagia. If patients do not incorporate the necessary changes to their diet and lifestyle, they are put more at risk for aspiration or choking. Alternatively, for those being discharged to another facility, it is important to communicate to the receiving facility the status of the patient's dysphagia. Often this is not communicated.

Comparing dysphagia subscales, by severity, to overall averages shows subjects diagnosed with Mild Dysphagia having a lower perceived quality of life than those diagnosed with Moderate/Severe Dysphagia. This might be due to the fact that patients with Mild Dysphagia have higher expectations of rehabilitative success and are therefore more are distressed by their symptoms, while patients with Moderate/Severe Dysphagia might be more accepting of their disability due to their low chances of full functional recovery.

The disabilities of stroke are multifactorial; dysphagia and aspiration risk are only two aspects of functional disabilities. Although our findings of perceived quality of life regarding

dysphagia and aspiration risk do not have a significant effect on discharge disposition, discharge planning requires an interdisciplinary and comprehensive approach. Post-stroke patients are at risk for many disabilities including paralysis, cognitive deficits, dysarthria, aphasia, dysphagia, aspiration, emotional deficits, and pain (National Institute of Neurological Disorders and Stroke, 2012). Understanding these sequelae, the needs of both patients and caregivers should be met during discharge planning (Shyu, Y., Chen, M., Chen, S., Wang, H., & Shao, J., 2008). Nurses should always strive for individualized care and patient satisfaction.

Limitations. It is important to note that the average age of our patient population was 61 years of age, classified as older-middle aged. Patients of this age have to have a high rate of co-morbidities and/or chronic disorders which this study cannot account for. Another limitation to consider is that this study only took place at one rehabilitation hospital setting.

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